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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,271	10/31/2003	Dennis M. Newns	YOR920030500US1	9194

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MCGINN INTELLECTUAL PROPERTY LAW GROUP, PLLC
8321 OLD COURTHOUSE ROAD
SUITE 200
VIENNA, VA 22182-3817

EXAMINER	
HARRIS, GARY D	

ART UNIT	PAPER NUMBER
1794	

MAIL DATE	DELIVERY MODE
08/05/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/697,271	NEWNS, DENNIS M.	
	Examiner	Art Unit	
	GARY D. HARRIS	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 May 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,6-9,16 and 19-26* is/are pending in the application.

4a) Of the above claim(s) *10-15 & 27* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 6-9, 16, 19-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 5/13/2009 have been fully considered but they are not persuasive. Applicant has amended claims such that the ferroelectric data layer has a localized region of bound charge. However, a localized region is not defined in the specification and one skilled in the art would not be familiar with what area is required for a localized region to exist. Examiner apologizes for any inconvenience, as during the phone interview on May 06, 2009 it was understood that claim 1 was to be amended to clearly describe a time constant and include a declaration to overcome the Ramesh invention. Examiner also cannot find where, the in-plane charge dissipation of mobile surface charges on the ferroelectric data layer surface without screening said polarized domains is clearly defined in the specification.

Claims 1, 6-9, 16, 19-26 are examined in the instant application:

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 6-9, 16 & 19-26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application

was filed, had possession of the claimed invention. A localized region is not defined in the specification and one skilled in the art would not be familiar with what area is required for a localized region to exist.

Claims 1, 6-9, 16 & 19-26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The in-plane charge dissipation of mobile surface charges on the ferroelectric data layer surface without screening said polarized domains is not defined in the specification.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims, 1, 6, 9, 16, 19 & 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "localized region" in claims 1 is a relative term which renders the claim indefinite. The term "localized region" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The scope of the area is not defined by the claim and one skilled in the art would not be familiar with

what area is required for a localized region to exist. Examiner interprets it to be any area of any size, as long as it is encompassed by the recording medium dimensions.

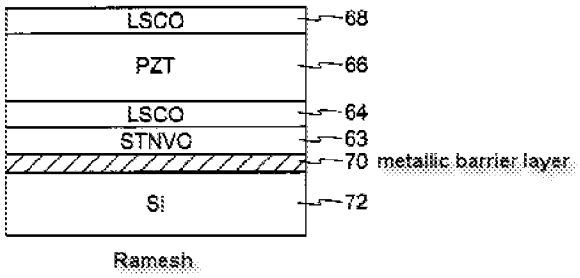
Claim Rejections - 35 USC § 103

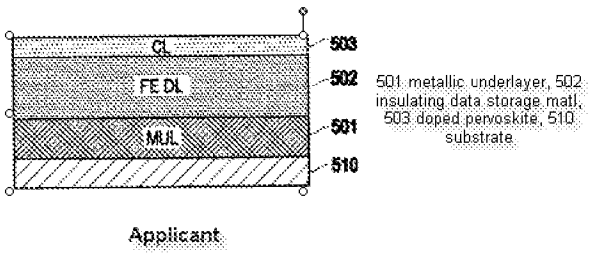
The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 6-9 & 16, 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramesh et al. US 6,642,539.

As to Claim 1 & 16 Ramesh et al. '539 discloses a memory (storage medium) and method of obtaining a barrier layer from a conductive material (metallic underlayer) with ferroelectric memory cells (Col. 9, Line 14-23) as illustrated in figure 8. Ramesh et al. '539 discloses a metallic barrier layer (Layer 70) in contact with a Silicon layer (layer 72) and STNVO layer (layer 63). The layers are comparative as follows:





As Illustrated Applicant's layer 510 corresponds with Ramesh layer 72, layer 501 corresponds to layer 70, layer 502 corresponds with layer 66, and layer 503 corresponds with layer 68.

Additionally, Ramesh et al. '539 discloses a total resistance of the barrier decreases with the barrier thickness and with the area of the barrier as it relates to desired switching time. But, does not disclose charge migration rate of the ferroelectric data layer. Claim 1 seems to be identical, except that the prior art is silent as to the inherent characteristics. Ramesh refers to materials that can be made electrically leaky depending on the thickness of the material in bulk (Col. 10, Line 63-67), which would be similar to applicants charge migration rate. These properties are inherent in physical properties including charge migration because the applicants and the inventors teach virtually identical structures with similar materials. The physical properties of similar materials will inherently be similar. The burden of proof is shifted to the applicant to show the prior art properties are different from those claimed. See In re Fitzgerald, 619 F. 2d 67, 205 USPQ 594 (CCPA 1980).

As to Claim 6, 9, 16 & 19, Ramesh et al. '539 discloses the use of doped perovskite (Col. 6, Line 10-36) and discloses the importance of the barrier layer thickness as it relates to the total resistance (Col. 10, Line 13-23). It would be obvious to one skilled in the art to optimize the thickness in order to change the total resistance in a given layer. The patentability of a product is independent of how it was made. Ex

parte Jungfer 18 USPQ 1796, 1800 (BPAI 1991); Brystol-Myers Co. v. U.S. International Trade Commission 15 USPQ 2d 1258 (Fed. Cir. 1989). The burden is on applicants to show product differences in product by process claims. In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP 2113.

As to Claim 7, 20 Ramesh et al. '539 discloses the use or $SrRuO_3$ results in a conductive oxide that bonds well with substrate (Col. 8, Line 49-64) which examiner interprets as an underlayer.

As to Claim 8, Ramesh et al. '539 discloses the use of PZT and SBT (Col. 3, Line 45-65) similar to applicant.

As to Claim 21, Ramesh does not disclose termination at the surface by a bound charge (positive or negative). However, since Ramesh understands that the polarization will become progressively smaller and acts as a capacitor it would necessarily have a feature of a bound charge (Col. 2, Line 57-67), Ramesh additionally understands that polarization can be manipulated with crystallization (Col. 4, Line 14-16) and summarizes charge dopants in Table 1 & 2. It would have been obvious to one skilled in the art to utilize a bound charge (polarized domain) terminating at the top surface through manipulation of crystallization.

As to Claim 22, Ramesh discloses an in-plane orientation (substantially normal to the surface) (Col. 3, Line 16-34).

As to Claim 23, Ramesh does not disclose termination at the surface by a bound charge (positive or negative). However, since Ramesh understands that the polarization will become progressively smaller and acts as a capacitor it would necessarily have a feature of a bound charge (Col. 2, Line 57-67), Ramesh additionally understands that polarization can be manipulated with crystallization (Col. 4, Line 14-16) and summarizes charge dopants in Table 1 & 2. It would have been obvious to one skilled in the art to utilize a bound charge (polarized domain) terminating at the top surface through manipulation of crystallization. Ramesh discloses an in-plane orientation (substantially normal to the surface) (Col. 3, Line 16-34). The sign charges that would be on the surface would be an intended use.

As to Claim 24 & 26, does not disclose the layer over said ferroelectric data layer comprises silicon. However, Ramesh discloses that the LSCO may include a silicon layer in the form of nitride in producing a MEM device in creating a hard surface (Col. 13, 14, Lines 55-67, 1-35). It would have been obvious to include silicon in order to enhance hardness properties.

As to Claim 25, the inherent characteristic of charge migration has been considered in a previous claim and in interpreted that the Ramesh invention would necessarily have a similar charge migration rate.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GARY D. HARRIS whose telephone number is (571)272-6508. The examiner can normally be reached on 8AM - 5PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Ruthkosky can be reached on 571-272-1291. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/G. D. H./Gary Harris
Examiner, Art Unit 1794

/Kevin M Bernatz/
Primary Examiner, Art Unit 1794

August 3, 2009